

## AMENDMENT AND RESPONSE

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Serial No.: 09/911,954

Filing Date: July 24, 2001

Attorney Docket No. 10018165-1

Title: METHOD AND APPARATUS FOR REDUCING INACCURACIES WHEN PROCESSING COLOR DATA WITH A MATRIX

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**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of claims:**

1. (Original) A method of processing color image data, comprising:
  - (a) examining the color components of a pixel in the image;
  - (b) selectively applying a matrix to the color components of the pixel to create an output color component only when the pixel is not in a dark area of the image.
2. (Original) The method of claim 1, further comprising:  
repeating steps (a) and (b) for essentially each pixel in the image.
3. (Original) The method of claim 1, further comprising:  
blending the transition between pixels in the image that are in a dark area and pixels in the image that are not in a dark area.
4. (Original) A method of processing color image data contained in an array of pixels, comprising: selecting at least one threshold;
  - (a) reading the color components of a pixel;
  - (b) transforming the color components of the pixel with a matrix when any of the color components of the pixel are greater than the threshold and otherwise preserving the pixel;
5. (Original) The method of claim 4, further comprising:  
repeating steps (a) and (b) for essentially each pixel in the array.
6. (Original) A method of processing color image data contained in an array of pixels, comprising:
  - (a) defining at least one threshold;

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- (b) defining a first and a second matrix;
- (c) reading at least 3 color components for the pixel;
- (d) applying the first matrix to the color components of the pixel to create an output color component when any of the color components are greater than the threshold, and;
- (e) otherwise applying the second matrix to the color components of the pixel to create the output color component.

7. (Original) The method of claim 6 further comprising:

- (f) repeating steps (c) through (e) for each pixel in the image.

8. (Original) The method of claim 7 where steps (a) through (f) are repeated to create a new output color component for each of the color components in the color image.

9. (Original) The method of claim 8 where a different threshold is used to create each output color component in the color image.

10. (Original) The method of claim 8 where there are different matrices for creating each output color component in the color image.

11. (Original) The method of claim 6 where the threshold is approximately 10 eight bit counts.

12. (Original) The method of claim 6 where the threshold is approximately 6 eight bit counts.

13. (Presently amended) A scanner, comprising:

- a photo-sensor array for converting an image into an electrical signal;
- an A-to-D converter to convert the electrical signal into raw digital data;
- a matrix for transforming the raw digital data for color components for each of a plurality of pixels adjacent a pixel into a corrected digital data color component for that pixel;

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the scanner configured to output the corrected digital data color component for that pixel only when the raw digital data for at least one of the color components of that pixel is greater than a pre-selected value.

14. (Original) A method of processing color image data contained in an array of pixels, comprising:

defining a first threshold and a second threshold, where the first threshold is larger than the second threshold;

defining a first and a second matrix;

(a) reading the color components of a pixel;

(b) applying the first matrix to the color components of the pixel when any color component is greater than the first threshold;

(c) applying the second matrix to the color components of the pixel when all the color components of the pixel are less than the second threshold, and;

(d) otherwise applying an interpolation between the first and second matrix to the color components of the pixel; repeating steps (a) through (d) for each pixel in the array.

15. (Presently amended) A method of processing data contained in an array of pixels, comprising:

defining a threshold;

defining a range around the threshold, the range having a top end and a bottom end;

defining a matrix;

(a) reading the color components of a pixel;

(b) applying the matrix to the color components of the pixel when any of the color components are above the top ~~of the high~~ end of the range;

(c) modifying the color components of the pixel by interpolation when all of the color components are below the top end of the ~~high~~ range and at least one color component is above the bottom end of the ~~low~~ range, and; otherwise preserving the pixel.

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16. (Original) The method of claim 15 further comprising:  
repeating steps (a) through (c) for each pixel value in the array.
17. (Original) The method of claim 16 where steps (a) through (c) are repeated to create a new output color component for each of the color component in the color image.
18. (Original) The method of claim 17 where a different threshold is used to create each output color component in the color image.
19. (Original) The method of claim 17 where there are different matrices for creating each output color component in the color image.
20. (Original) The method of claim 15 where the threshold is approximately 10 eight bit counts.
21. (Original) The method of claim 15 where the range is approximately 2 eight bit counts.
22. (Original) The method of claim 15 where the threshold is approximately 6 eight bit counts.
23. (Presently amended) A scanner, comprising:  
a photo sensor array for converting an image into an electrical signal;  
an A-to-D ~~A-to-D~~ converter to convert the electrical signal into raw digital data;  
a first matrix and a second matrix, both matrixes for transforming the raw digital data for color components for each of a plurality of pixels adjacent a pixel into corrected digital data color component for that pixel;  
the scanner configured to create the corrected digital data color component for that pixel by selecting between the first and second matrix as a function of the raw digital data value.

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24. (Presently amended) A computer readable medium containing a program for adjusting the color data from the color components for pixels in an a color image, comprising:

a matrix;

the program configured to modify the data from a color component for a pixel of the color image based on the data for the color components for the pixel using the matrix only when the data from at least one of the color components for the pixel is above a predetermined value.

25. (Presently amended) A camera, comprising:

a photo sensor;

a lens system that forms an image on the photo sensor;

a matrix for mapping image data; and

a processor configured to map color components of the image data only when the image data from at least one color component exceeds a predetermined value.

26. (Presently amended) A camera, comprising:

a-photo-sensor;

a lens system that forms an image on the a photo sensor;

a means for mapping image data; and

a processor configured to map color components of the image data only when the image data from at least one color component exceeds a predetermined value.

27. (Original) A method of processing color image data contained in an array of pixels, comprising:

(a) defining at least three thresholds;

(b) defining a first and a second matrix;

(c) reading at least 3 color component for a pixel;

(d) applying the first matrix to the color components of the pixel to create an output color component when the first color component is larger than the first threshold or the second color

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component is larger than the second threshold or the third color component is larger than the third threshold, and;

(e) otherwise applying the second matrix to the color components of the pixel to create the output color component;

(f) repeating steps (c) through (e) for each pixel in the array.